DEVELOPMENT AND IMPLEMENTATION OF *VIVIENDO BIEN CON PÉRDIDA AUDITIVA*: A SPANISH-LANGUAGE AURAL REHABILITATION

by

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by ***Karla Navarro de Gutiérrez***, titled ***Development and Implementation of Viviendo bien con pérdida auditiva: A Spanish-Language Aural Rehabilitation Program*** and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Audiology.

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Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

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Abstract

Hearing loss is a prevalent chronic condition that is experienced by approximately 1 in 4 individuals over the age of 12 in the United States. While there are various intervention options for people with hearing loss, research has shown that the overall number of people who seek help, and pursue and adhere to an intervention, is low. In particular, hearing aid uptake and continued use are low. When hearing aids are pursued, communication difficulties are often still experienced because hearing loss can result in deficits that should be addressed through counseling and education. An adequate supplementary intervention for some people with hearing loss is aural rehabilitation (AR), specifically, group AR. Previous investigations have reported that group setting AR has been beneficial to both people with hearing loss and their accompanying communication partners. Given the reported success of group AR programs in English and the continued growth of Spanish-speaking populations in the United States, Spanish-language adaptations have been offered in community settings. The purpose of this investigation was to develop and pilot the implementation of *Viviendo bien con pérdida auditiva*, an on-campus AR program for Spanish-speaking adults in the Tucson community. A second objective of this study was to observe the clinical program and assess it using a variety of self-reported outcome measures. Participant feedback, as well as consistency of results, on one measure, and similar investigator observations across Spanish-language group AR studies, indicate successful development and implementation of the program. The outcome measures used in this study reflect a range of self-reported hearing handicap and variable effects of the intervention were seen post-assessment. Based on the receptiveness of participants, there is a need for Spanish-language group AR and this investigation contributes to the foundation for such services.

Keywords: Spanish aural rehabilitation, hearing loss, Spanish-audiologic services

Introduction

Development and Implementation of *Viviendo bien con pérdida auditiva:*

A Spanish-Language Aural Rehabilitation Program

Hearing loss is one of the most prevalent chronic conditions, particularly among older adults (Cardemil et al., 2013). Approximately 22% of people over the age of 12 experience hearing loss in at least one ear, which translates into over 60 million individuals in the United Sates alone (Goman and Lin, 2016). Additionally, the prevalence of hearing loss has been noted to increase exponentially with every age decade. According to Goman and Lin (2016), two thirds of those over the age of 70 have bilateral hearing loss and approximately three quarters of individuals in that age group have hearing loss in at least one ear.

While epidemiologic data demonstrate that there is a large number of people experiencing hearing loss, research investigating pursuit and use of treatment has found that despite there being several intervention options available, help-seeking and adherence are low. Such investigations have focused on the acquisition and use of hearing aids given that it is the primary treatment for permanent hearing loss. Based on an analysis of the data gathered by two National Health and Nutrition Examination Surveys, Bainbridge and Ramachandran (2014) estimated that only one-third of probable hearing aid candidates in the United States were users. Some of the factors that have been commonly reported as barriers for acquisition and/or continued use of amplification include the high cost of devices, stigma associated with hearing loss and hearing aids, insufficient awareness of hearing difficulties or underestimation of handicap (Meister, Walger, Brehmer, von Wedel, & von Wedel, 2008). Nonetheless, even when hearing aids are pursued, according to Holmes (2016), communication difficulties are still frequently experienced, as hearing loss results in deficits that often need to be addressed through

counseling and education. Therefore, a supplementary intervention for people with hearing impairment is aural rehabilitation (AR).

Applying terminology from the World Health Organization's *International Classification of Functioning, Disability and Health*, Boothroyd (2007) defines AR as an intervention that uses sensory management, counseling, training, and instruction to reduce the impact of hearing loss on a person's quality of life by ameliorating the communicative challenges, and lessening the limitations placed on social interactions, activities, and participation. Boothroyd indicates that the goal of group AR counseling programs is best met when it is used as a supplementary intervention to sensory management tools such as hearing aids. While AR can also be individualized, group AR is an excellent alternative and in fact, according to Hawkins (2005), the most common AR approach used with adults. AR in a group setting has been described as advantageous because it provides participants with opportunities to share experiences and exchange ideas about how to approach communicative challenges, providers are able to serve more than one person at a time, and it is a cost-effective solution for all parties (Hawkins, 2005).

Specifically, group AR programs have been reported to be beneficial to participants in several ways. Benefits reported by researchers include reductions in self-perception of hearing handicap, better self-perception of quality of life, and improved use of hearing aids and application of better communication strategies (Hawkins, 2005). Additionally, another advantage of group AR is that the service is often extended to frequent communication partners (FCPs). In fact, Preminger (2003) found that after participation in one of eight six-session AR groups, the self-report measures taken at the completion of the program by participants with hearing loss (n=25) and their significant others (n=13) demonstrated an increase in the use of effective communication strategies. Furthermore, a reduction of hearing handicap was also noted, particularly in those who were accompanied by a significant other. Reduction in hearing

handicap was determined through an analysis of self-reports provided by the individuals with hearing loss and those provided by their significant others, who also rated the handicap of the person with hearing loss (PHL). Similar findings have been reported by other investigators who have included significant others in AR groups. Specifically, Habanec and Kelly-Campbell (2015) reported that group AR ameliorated third-party disability, referring to the disability experienced by a significant other resulting from the effects of hearing loss.

Although most of the group AR benefits measured have been reported from findings of research-based groups, there are clinical programs that are carried out routinely. One of those programs is the University of Arizona's Living Well with Hearing Loss (LWHL) AR group. LWHL is an on-campus group that consists of a series of three sessions where people with hearing loss and their FCPs learn about and discuss hearing loss, the effects of hearing loss on communication, communication strategies, and hearing aids and assistive listening devices. Sessions are led by graduate students in the university's Doctor of Audiology program, who are supervised by a clinical audiologist that is present throughout each session. The sessions are each two hours long and several individuals participate in each group. Since its creation during the 2009-2010 academic year, LWHL has been offered every semester and has now had more than 700 participants. While LWHL is primarily offered on the University of Arizona campus, due to the needs of the community, related lectures and adaptations of the program have been offered to off-campus audiences (*Living Well with Hearing Loss*, n.d.).

In order to understand the rationale for some of the adaptations of LWHL, it is important to be familiar with the demographics of the community that the program was developed in. As is the case in the United States overall, in Tucson, Hispanics are the largest minority population. In Tucson, over 40% of the population identifies as Hispanic or Latino (U.S. Census Bureau, 2010). Further, it is estimated that Spanish is the home language for around 30% of the Tucson

population (Statistical Atlas, 2015). Due to the proximity of Mexico and because of the fact that Mexican varieties are the most widely spoken Spanish dialect all around the southwestern part of the United States, it can be inferred that the most widely spoken dialect of Spanish in Tucson is also Mexican (Silva-Corvalán, 2004). Based on the characteristics of a large part of the Tucson population just described, one major adaptation of LWHL has been for the Spanish-speaking audience of *El Pueblo*, a local senior center. The LWHL group materials and protocol were adapted linguistically and culturally to develop and implement a community-based AR program. The Spanish-language group was part of an effort to build a community partnership to promote hearing health and was carried out alongside an English-language AR group in the same facility for comparison. For the Spanish-language AR group, audiologists and audiology students in collaboration with community health workers who were familiar with the target audience, its culture, and its language, developed the materials and facilitated the sessions (Gonzalez-Fulcher, Durkin, Harris, & Marrone, 2012).

Since this program was carried out in a facility that serves a rather large group of older adults, the first phase of the program implementation was the identification of potential group candidates. Determination of candidacy was based on case history, audiometric testing, and the Spanish-language versions of two self-report audiologic measures; the 5-minute hearing test and the Hearing Handicap Inventory for the Elderly Screening version. The second phase was the facilitation of the AR group which consisted of three two-hour sessions across consecutive weeks and was open to FCPs as well. Based on the results of the International Outcomes Inventory of Alternative Interventions completed by the 10-12 participants, the investigators concluded that a majority (85%) of the individuals experienced benefit, particularly in the form of effective use of communication strategies after participating in the *El Pueblo* AR group.

Holmes (2016) led a similar investigation that also implemented the University of Arizona's Spanish-language LWHL. Using the materials adapted for *El Pueblo*, the Spanish-version of the LWHL group was implemented in the Communication Sciences & Disorders Department at the University of South Florida (USF) in Tampa, Florida. Although the demographics of central Florida are different from those of southern Arizona, given that the Hispanic/Latino population is not primarily of Mexican origin, the materials were only minimally adapted. It was determined by the facilitators that the materials were appropriate for Spanish-speaking ethnicities of the area and found that the materials were well-accepted by the participants of the study. Like the *El Pueblo* investigation, this study also included the significant others (n=2) of the participants with hearing loss (n=4). Using the same outcome measures as the *El Pueblo* investigators, but with Cuban and Ecuadorian participants, the USF investigation found that there were similarities in performance across the two cultural groups. Although both studies found minimal changes across measures, it was indicated that the similarities between the two populations were the most important findings (Holmes, 2016).

Despite the efforts made to develop linguistically and culturally appropriate materials and services for Spanish-speaking patients, neither of the programs described above have provided on-campus clinical services like the English-language LWHL program at the University of Arizona. Considering the Tucson demographics discussed, the importance of providing ongoing Spanish-language group AR services is clear. Therefore, the purpose of this investigation was to develop and pilot the implementation of *Viviendo bien con pérdida auditiva* (VBPA), an on-campus AR group for Spanish-speaking adults in the Tucson community, with the purpose of educating them and providing support for their hearing and communication needs. A second objective of this study was to observe the clinical program and assess it by gathering data through a variety of self-reported outcome measures. The rationale for including a variety of

pre- and/or post-assessments was that while previous research has found AR to be beneficial, the findings have not been overwhelming and one possible explanation for that is, as Hawkins (2005) puts it, "that the outcome measures chosen by the experimenters do not tap the benefit that patients receive from the AR group" (p. 490). Therefore, by integrating both commonly used and not so frequently used measures, into the evaluation of this program, the objective is to identify assessments that may be better able to assess AR group benefits. Given that VBPA was modeled after the well-established LWHL program and developed with careful consideration for the target audience, it was hypothesized that participants would be receptive to the intervention and show improvements in perceived self-efficacy and hearing handicap that are comparable to those of other Spanish-language AR groups.

Methods

Participants

Participants were recruited in the Fall of 2017 and the Spring of 2018 for the VBPA classes from a local senior center and the hearing clinic of the University of Arizona. Recruitment was completed in person by licensed audiologists and student clinicians of the on-campus hearing clinic who informed Spanish-speaking patients and their families about the program during their clinical appointments, and a member of the program who promoted it at the senior center. Additionally, an informational flyer (Appendix A) was distributed around the community and posted in the on-campus clinic. A sign-up list was kept in the lobby of the university clinic for those interested and a second list of interested individuals was compiled by the senior center supervisor. The program was generally open to all, with the only criteria being that participants were Spanish-speaking adults and that a maximum of 10 individuals would participate in each group. Hearing loss was not a controlled variable given that the program was

also intended for communication partners. Participation in the VBPA group was free of cost and participants were provided take-home materials including a folder that contained informational flyers and brochures, a notepad, a pen, disposable earplugs, and an audiologic community resources list. Lastly, the participants received LWHL buttons used to promote self-advocacy, which read: "*Por favor mírame y háblame lento"* ("Please face me and speak slowly"); no additional compensation was given.

Due to scheduling conflicts and health issues, not all the individuals who expressed interest were able to participate. For the same reasons, not all who began the program were able to complete it. While a total of 11 individuals expressed interest and signed-up for the program, only seven participants attended at least one session and four of those seven attended all three sessions. Among those who attended at least one session were two male participants and five female participants who were all Tucson residents, identified as Hispanic, and spoke a Mexican dialect of Spanish.

The data used for this study was collected throughout two VBPA groups and each consisted of three two-hour meetings. The first group was carried out in the Fall of 2017 and the second group was completed in the Spring of 2018. A total of four individuals participated in the first set of classes and the remaining three participated in the second set of classes. Group 1 was composed of one male participant and three female participants. Three of the participants in group 1 identified themselves as having a hearing impairment and one was there as a communication partner. Three of the participants were members of the senior center and one was a patient of the clinic. The male participant and one of the female participants were monolingual Spanish speakers, as expected. However, the other two participants were bilingual Spanish-English speakers who were considered to be English dominant as they could not read or write Spanish, only English. Group 2 consisted of one male participant and two female

participants. Two of those participants identified themselves as communication partners, while one identified as a PHL and was a patient of the on-campus clinic. Interestingly, one of the female participants attended with the intention of learning how to better communicate with a FCP who has a hearing loss and is a patient of the university's hearing clinic, but the PHL could not attend. All group 2 participants were literate in Spanish and only one spoke some English. Additional participant information that was collected using a brief case history form (Appendix B) is summarized below and shown in Table 1.

All participants were older adults who ranged between the ages of 66 and 93. Three of them reported having less than a high school education, two stated they had completed high school, and two had post-secondary education. Regarding marital status, one participant reported being single, four others stated that they were married, and two identified as widows. All participants reported having health insurance; five had Medicare, one had Medicaid, and one did not indicate the type of medical coverage. Other case history questions addressed occupational and recreational noise exposure, use of hearing protection, previous hearing evaluations, tinnitus, difficulty hearing on the telephone, self-perception of hearing loss, family member perception of hearing loss, hearing aid use, and overall health status.

Table 1. *Demographic and case history information of Viviendo bien con pérdida auditiva Participants*

Characteristic	Participants						
	Group 1				Group 2		
	1VB1	1VB2	1VB3	1VB4	2VB5	2VB6	2VB7
Ethnicity	Hispanic	Hispanic	Hispanic	Hispanic	Hispanic	Hispanic	Hispanic
Sex	Female	Female	Male	Female	Male	Female	Female
Age (in years)	93	73	85	75	75	66	75
Marital status	Widowed	Single	Married	Widowed	Married	Married	Married
Education	Less than HS	HS	More than HS	Less than HS	HS	More than HS	Less than HS
Health insurance	Medicare	N/A	Medicaid	Medicare	Medicare	Medicare	Medicare
PHL/FCP	PHL	FCP	PHL	PHL	PHL	FCP	FCP
Hearing aids	Yes	N/A	Yes	Yes	Yes	N/A	N/A
Tinnitus	Sometimes	No	No	Sometimes	Sometimes	No	Sometimes
Previous hearing evaluation	Yes	No	Yes	Yes	Yes	No	No
Occupational noise exposure	Yes	N/A	Yes	No	Yes	No	Yes
Recreational noise exposure	Yes	No	No	No	Yes	No	No
Hearing protection	No	No	Yes	Yes	Yes	No	No

Table 1. *Demographic and case history information of Viviendo bien con pérdida auditiva Participants* (Continued)

Self-perception of HL	Yes	Don't know	Yes	Yes	Yes	Yes	Yes
Family member perception of HL	Yes	No	Yes	Yes	Yes	No	Yes
Telephone difficulty	Always	Never	Always	Always	Sometimes	Sometimes	Sometimes
Health status	Regular	Regular	Very good	Good	Good	Very good	Regular

Note. 1VB#=*Viviendo bien* group 1, participant number; 2VB#=*Viviendo bien* group 2, participant number; PHL=person with hearing loss; FCP=frequent communication partner; HS=high school; N/A=Not applicable.

Program Content and Structure

Given that VBPA was modeled after the University of Arizona's LWHL program, the structure of the program was followed closely, but adaptations of materials were made with consideration for the linguistic and cultural needs of the intended audience. Each PowerPoint presentation slide and flyer were translated using a functionalist team-based approach. The VBPA team involved two graduate audiology students who are native Spanish speakers, one who was the lead student investigator and another volunteer investigator. A highly-proficient Spanish-speaking clinical supervisor was also part of the team. While a translation studies expert was not consulted during the translation of the materials, two of the team members had previous experience in translation and had collaborated with an expert in that field. In fact, prior to the adaptation of materials for this investigation, the lead student investigator had completed an independent study translating clinical forms for the university's hearing clinic, which lead to

the pursuit of this study. It is important to note that some materials were kept in English given time constraints and the length of the documents and other materials were adopted from previous investigations that used Spanish-language outcome measures. Although some materials were available in both languages, in anticipation of primarily monolingual Spanish-speaking participants, only the Spanish-version of those materials was prepared for VBPA. However, because some of the participants were bilingual Spanish-English speakers who only read English, accommodations had to be made and facilitators sight translated the Spanish forms into English.

Like LWHL, VBPA consisted of three, two-hour long sessions that were held once per week during three consecutive weeks at the University of Arizona in the Department of Speech Language and Hearing Sciences. All sessions were facilitated by one of the two graduate audiology students, who were supervised by the clinical audiologist. A description of the content covered in each session follows.

The first session began with introductions of the facilitators and an overview of the program including its purpose, group rules, and topics. That was followed by demonstrations of how to properly use the microphone to foster a good listening environment for all. An outline of topics to be covered and demonstrations of proper microphone use were included at the beginning of each subsequent session as well. Participants were asked to introduce themselves. They stated their names, talked about their hobbies and their reason for attending VBPA, and commented on the importance of the program. A list of facts about hearing loss was briefly reviewed prior to a brief overview of the anatomy and physiology of the auditory system. Sound was defined as air particles that move and form vibrations that travel through the outer, middle, and inner ear to be interpreted by the brain. A description of hearing loss including its causes, types, degrees, and effects was provided. Differences between the roles and education of several

hearing health professionals, including audiologists, otorhinolaryngologists, and hearing aid dispensers were explained. The audiogram and audiologic evaluation components were also explained, followed by a hearing loss simulation. Each section covered in this session was followed by a review or discussion. Participants were asked questions that tested their recall of information and encouraged to share personal experiences. A break was also integrated half way through the session to allow time for refreshments. During this session, participants were provided research disclosures that informed them of the investigation, its purpose, and indicated approval from the Institutional Review Board at the University of Arizona. Additionally, participants were individually interviewed by the facilitators to gather intake information and complete group confidentiality agreements and pre-assessment measures, which are described later. The point at which the pre-assessments were completed differed between group one and two given that it was noted that when completing the documents the participants had many questions about the program that would be answered during the first half of the session. With group one the intake form and pre-assessments were completed after the break and group two completed them prior to beginning the lecture.

Session two began with completion of a photo release form, followed by a review. Participants were asked what they recalled from the previous week and the facilitator encouraged brief discussion around the comments made. That session was centered on effective communication. Several topics related to communication were covered, including the components of a communicative exchange, how hearing loss and the environment lead to communication breakdowns, and how to improve communication. A speaker, a listener, and a message were identified as the basic components of communication and the idea that communication is a two-way street was emphasized to highlight the importance of a communication partner's role. It was explained that both the listener and the speaker are equally

responsible for effective communication and that was further stressed by presenting communication strategies that each party can adopt to improve communication. A communication breakdown was demonstrated by the facilitators and participants were asked to identify the cause of the breakdown and to propose communication strategies that could remedy the situation. Participants identified with the situation and personal anecdotes of communication breakdowns were shared.

During the third session, focus was placed on amplification, other interventions, and community resources available locally. Hearing aid styles and the potential benefits and limitations of hearing aids overall were discussed. Assistive listening technologies including loop systems, Bluetooth, FM, and caption phone services were also discussed, followed by aural rehabilitation groups and their benefits. An explanation of the Americans with Disabilities Act was also provided. To end the lecture, a list of community resources for access to hearing aids was reviewed. Following the lecture, demo instruments were made available to the participants and the facilitators provided orientation to familiarize them with hearing aids and assistive devices. A program evaluation was completed by the participants at the end of the third session. At that point, facilitators were asked to step out of the room, only the clinical supervisor remained in the room to help complete the evaluation.

Additional post-assessments administered at least two weeks after the last session, included the Spanish HHIE-S, the Spanish SESMQ, and the Spanish version of the International Inventory for Alternative Intervention (IOI-AI). Before leaving, group 1 participants were advised that they would be contacted via phone to complete the post-assessments. Two weeks after the third group session, each participant was contacted via phone by the lead student-investigator to complete post-assessment measures. Some participants were not available to complete the assessment exactly two weeks after the sessions and had to be contacted at their

convenience. Given time conflicts encountered with the first group, as well as feedback provided by those members, the mode of administration for the second group was modified. For group 2, the participants were given the option to be sent the post-assessments via mail or via phone with a printed copy that would be provided to them at the last session. All members of group 2 chose to complete the assessments on their own and returned them via mail; only one person opted to have a reminder call made during the week that the assessments were to be completed and returned. All group 2 participants returned the assessments exactly two weeks post VBPA.

Assessments

Hearing Handicap Inventory for the Elderly-Screening (HHIE-S). The HHIE-S Spanish version (Lichtenstein & Hazuda, 1998), is a translation of the shorter 10-item form created from the widely used Hearing Handicap Inventory for the Elderly (Ventry & Weinstein, 1982) instrument. The HHIE-S questionnaire is used to measure self-perception of hearing difficulty. The ten questions can be answered with one of three response options: 1. *Yes*, 2. *No*, and 3. *Sometimes*, which respectively receive a score of 4, 0, and 2 for a total of 40 possible points. The total score is the sum of all the responses that can thus range between 0 and 40 and is indicative of the overall degree of hearing difficulty reported. Higher scores suggest greater self-reported hearing difficulty and scores above 10 warrant referral for further audiologic evaluation. Total scores ranging between 0 and 8 indicate no hearing handicap, scores between 10 and 24 indicate a mild to moderate hearing handicap, and scores of 26 to 40 are indicative of a significant hearing handicap. A minimal clinically significant difference has not been identified for the HHIE-S English or Spanish versions with regard to AR. Previous research has reported that the HHIE-S has a test-retest reliability of 0.84 (Ventry & Weinstein, 1983; Weinstein, 1986). The Spanish HHIE-S version was included in this investigation because it is a brief and commonly used self-report measure that has been reported on by investigations of group AR

programs which allows for comparison across studies. It should be noted that this investigation used the Spanish version of this questionnaire that was adapted for *Oyendo Bien* (OB), another community outreach program of the University of Arizona (Colina, Marrone, Ingram, and Sánchez, 2017).

Amsterdam Inventory for Auditory Disability and Handicap (AIADH). The AIADH (Kramer, Kapteyn, Festen, & Tobi, 1995) is a questionnaire that assesses self-report of disability through questions that focus on five basic aspects of auditory disability: 1. *distinction of sounds*, 2. *auditory localization*, 3. *intelligibility in noise*, 4. *intelligibility in quiet*, and 5. *detection of sounds*. The Spanish version of the AIADH instrument (S-AIADH) used as a pre-assessment in this investigation consists of 30 questions that are each accompanied by a picture that illustrates the situation presented in the question; this being a reason for its inclusion in the current study. Respondents are given four response alternatives per question, which are rated from 1 (*almost never*) to 4 (*almost always*), with the exception of two items that use an opposite response scale. Regardless of the response scale order, higher scores on this instrument are indicative of better hearing and total scores can range between 30 and 120 points. The S-AIADH has been found to have an intraclass correlation coefficient of 0.98 (Fuente, McPherson, Kramer, Hormazábal, & Hickson, 2012).

Self-Efficacy for Situational Management Questionnaire (SESMQ). The Spanish version of Self-Efficacy for Situational Management Questionnaire (SESMQ) is a translation created from of the original English SESMQ (Jennings, 2005) for the OB program (Colina, Marrone, Ingram, and Sánchez, 2017). The SESMQ is a self-assessment based on the perceived self-efficacy theory to evaluate a group aural rehabilitation program's effectiveness. Self-efficacy with regard to communication refers to the beliefs an individual has about his/her capabilities "to mobilize the motivation, cognitive resources and courses of action needed to

meet the demands of the range of everyday difficult listening environments" (Jennings, 2005, p. 60). Difficult situations encompass familiar and unfamiliar settings and familiar and unfamiliar speakers, which were variables considered in the development of the 20 situations presented in the questionnaire. Each of the 20 situations presented are accompanied by two questions, each belonging to one of two subscales. The first scale is the *hearing ability scale* (SESMQ-H), which assesses how well someone can hear in the given situations and respondents are given response options ranging from 0 or *not well at all* to 10 or *very well*. The second scale is the *confidence scale* (SESMQ-C), which assesses how confident someone is in his/her ability to manage the given situation; response options range from 0 or *not confident at all* to 10 or *very confident*. Total assessment scores range from 0 to 200 and higher scores reflect higher self-efficacy. Total scores ranging between 0 and 80 indicate low self-efficacy, scores between 81 and 140 indicate a medium self-efficacy, and scores of 141 to 200 are indicative of high self-efficacy. Despite this being a lengthy questionnaire, it was selected for this investigation as a pre- and post-assessment because it has been found to be a highly reliable measure with intraclass correlation coefficients of 0.93 and 0.94 for the *hearing ability* and *confidence* scales respectively (Jennings, 2005; Jennings, Cheesman, Laplante-Lévesque, 2014).

Program Evaluation. The VBPA Program Evaluation shown in Appendix C was adapted from the form used in LWHL. The program evaluation is a single-sided, program-specific questionnaire that primarily consists of questions about the usefulness and the clarity of information provided on five topics discussed throughout the VBPA sessions. The questions are answered using a Likert scale with five options, 1 being *completely disagree* and 5 being *completely agree*. The evaluation also includes a multiple-choice question for overall rating of the program, a section for written feedback and suggestions, an area to indicate whether

authorization to use comments is provided or not, and a section to indicate if the person attended as a PHL or as a FCP.

International Outcome Inventory-Alternative Interventions (IOI-AI). The Spanish version of the IOI-AI (Noble, 2002) used in this investigation is an adaptation created for OB (Colina, Marrone, Ingram, and Sánchez, 2017). The questionnaire is a short post-assessment of non-hearing aid interventions, such as aural rehabilitation groups. The seven-item instrument includes a question for each of the following outcome domains: 1. daily use, 2. benefit, residual activity limitations, 3. satisfaction, residual participation restrictions, 4. impact on others, and 4. quality of life. Different five-point Likert scales are used for each question and options vary depending on the question, but all have responses alternatives ranging from one to five and have the highest score (5) or most positive option is always on the right (Noble, 2002). The Spanish version of the IOI-AI was used in this investigation because the questionnaire is brief, and its different items can easily be adapted to the given intervention. Additionally, the instrument has been used by several studies that have shown benefit from AR groups, including those conducted at *El Pueblo* and USF. It should be noted that the significant other version of this instrument has also been used in previous research but was not included in this investigation because hearing was not assessed using audiometric testing and thus it is possible that all participants, including those who did not identify as having a hearing loss, may have a hearing impairment.

Upon completion of the first session of each group, pre-assessments were assigned participant identifiers that were stored in a password protected file. Each person's post-assessment forms were then assigned the same identifier code and all data was entered into REDCap, a web application used to create and manage the project's database. Data was then exported into a Microsoft Excel file and analyzed using descriptive statistics.

Results

Prior to discussing the results obtained through the outcome measures used, this section will first review observations made in the development and implementation of the program. To meet the first objective of this investigation, LWHL materials had to be adapted to create linguistically and culturally appropriate materials. While two similar programs that were also modeled after the LWHL had been created previously, none of those materials were adopted for VBPA. An aspect of the program development stage of this study that was particularly challenging was identifying the most appropriate terms for concepts such as "hearing aid". Searching through resources including online audiology clinic sites from Spanish speaking countries and literature conducted in Spanish-speaking countries, the investigators found that there were often several options. Terms used, such as *"aparato auditivo",* were agreed upon through discussions amongst the three facilitators about why one term was more appropriate than another. Another challenging aspect of the material adaptation was ensuring that the language used was generally not too complex while also using the correct field specific terminology when presenting topics such as anatomy. The readability of the materials was important to the investigators because it was anticipated that there could be a range of education levels amongst participants and they wanted to ensure that all attendees felt comfortable with the material presented. It appeared that for those who were monolingual Spanish-speakers, the language used was adequate. In fact, some of the participants were observed using the technical terms for anatomical parts during reviews and discussions. Nevertheless, it was unanticipated that some of the participants would be English dominant Spanish-English bilinguals. Although it was not a major challenge, it is worth noting that the facilitators had to adapt to the dynamics of the group and identify when there was a need to reiterate something in the other language. In addition, to the unexpected language differences amongst participants, other attendee characteristics that

facilitators noted as barriers in completing assessments efficiently were vision problems and dexterity limitations, as well as poor understanding or lack of familiarity with forms using scales. Response rate was another barrier encountered during the implementation of this program. All participants completed every pre-assessment; however, one participant (1VB2) of the first cohort was not able to attend any sessions past the first one and therefore did not complete any post-assessments as he could not be contacted. Similarly, two participants of the second group (2VB5 and 2VB7) were not able to attend the last two sessions but completed all the post-assessments with the exception of the program evaluation. Despite those challenges, data was gathered, and the results of each measure are presented below.

Pre-Assessment

S-AIADH. Table 2 shows the individual and mean scores per item, as well as standard deviations from the S-AIADH questionnaire, which was administered during pre-assessment. In addition, the table shows the total scores per participant and the mean and standard deviation for the total scores. The S-AIADH was used as an additional assessment of self-report of hearing impairment in addition to the Spanish HHIE-S. Unlike the SESMQ and the IOI-AI, the S-AIADH was not specifically created to assess benefit from group AR participation. Although the instrument is typically used as a pre- and post-assessment measure, given that it is not specifically designed to assess group AR interventions, it was it was not used as a post-assessment. Additional rationale for choosing not to use the S-AIADH post-intervention was its length, which in combination with the rest of the post-assessment questionnaires, would have been too long for participants to complete on their own. While having used this assessment only prior to the intervention limits the interpretation of the results, a descriptive analysis follows.

Recall that scores on the S-AIADH and scores can range between 30 and 120 points with higher scores indicating better hearing (Fuente, McPherson, Kramer, Hormazábal, & Hickson, 2012). The S-AIADH results show that participants report a range of hearing handicap. The

lowest total score (51.0) was that of a PHL and hearing aid user, while the highest total score (119.0) was that of a person who identified as a FCP. For group 1 it was true that all those who identified as having a hearing loss had lower scores than the one FCP, indicating greater self-report of disability. In contrast, in the second cohort one of two FCPs scored lower than the one PHL.

Table 2. *Individual and Mean Pre- and Post-Assessment S-AIADH Scores per Item and Total Individual Scores*

Item Number	Participants (*n*=7)								
	1VB1	1VB2	1VB3	1VB4	2VB5	2VB6	2VB7	Mean	SD
1	4.0	4.0	3.0	2.0	4.0	4.0	2.0	3.3	0.1
2	3.0	4.0	4.0	2.0	4.0	4.0	3.0	3.4	0.8
3	1.0	4.0	1.0	3.0	4.0	4.0	2.0	2.7	1.4
4	2.0	4.0	3.0	2.0	4.0	4.0	3.0	3.1	0.9
5	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.6	0.5
6	2.0	4.0	2.0	3.0	4.0	4.0	3.0	3.1	0.9
7	1.0	4.0	2.0	3.0	4.0	4.0	2.0	2.9	1.2
8	3.0	4.0	4.0	1.0	2.0	4.0	4.0	3.1	1.2
9	1.0	4.0	3.0	3.0	4.0	4.0	2.0	3.0	1.7
10	1.0	4.0	1.0	1.0	4.0	4.0	2.0	2.4	1.6
11	1.0	4.0	2.0	3.0	4.0	4.0	2.0	2.9	1.2
12	2.0	4.0	2.0	3.0	4.0	3.0	3.0	3.0	0.8
13	1.0	4.0	2.0	1.0	4.0	4.0	2.0	2.6	1.4
14	2.0	4.0	2.0	3.0	4.0	4.0	3.0	3.1	0.9
15	1.0	4.0	2.0	3.0	4.0	4.0	2.0	2.9	1.2
16	2.0	4.0	2.0	3.0	4.0	4.0	3.0	3.1	0.9
17	1.0	4.0	2.0	3.0	4.0	4.0	4.0	3.1	1.2
18	4.0	4.0	2.0	1.0	3.0	4.0	3.0	3.0	1.1
19	1.0	4.0	2.0	3.0	4.0	4.0	2.0	2.9	1.2
20	2.0	4.0	2.0	1.0	4.0	4.0	3.0	2.9	1.2
21	1.0	4.0	2.0	2.0	4.0	4.0	3.0	2.9	1.2
22	2.0	4.0	2.0	1.0	4.0	4.0	3.0	2.9	1.2
23	1.0	4.0	4.0	4.0	4.0	4.0	4.0	3.6	1.1
24	1.0	4.0	3.0	3.0	4.0	4.0	3.0	3.1	1.1
25	1.0	3.0	1.0	1.0	4.0	4.0	2.0	2.1	1.1
26	1.0	3.0	1.0	1.0	4.0	4.0	3.0	2.3	1.4
27	1.0	4.0	1.0	3.0	4.0	4.0	2.0	2.7	1.4
28	2.0	2.0	3.0	4.0	4.0	4.0	2.0	3.0	1.0
29	1.0	4.0	2.0	3.0	4.0	4.0	3.0	3.0	1.1

Table 2. *Individual and Mean Pre- and Post-Assessment S-AIADH Scores per Item and Total Individual Scores* (Continued)

30	2.0	1.0	2.0	2.0	4.0	4.0	3.0	2.6	1.1
Total Scores	51.0	113.0	69.0	71.0	115.0	119.0	81.0	88.4	27.0

Pre-/Post-Assessment

HHIE-S. The HHIE-S Spanish version pre- and post-intervention results are shown for each participant in Table 3. The results indicate a wide range of hearing handicap reported by participants. Based on the HHIE-S score categorization, total scores ranging between 0 and 8 indicate no hearing handicap, scores between 10 and 24 indicate a mild to moderate hearing handicap, and scores of 26 to 40 are indicative of a significant hearing handicap (Weinstein, 1986). Scores prior to participating in VBPA were above 10 for all participants, with the exception of one (1VB2), indicating at least a mild hearing handicap for a majority of attendees. During pre-assessment among those who reported a hearing handicap were three people whose scores were indicative of a mild to moderate hearing handicap and three others who reported a significant hearing handicap. Following the intervention, two participants (1VB1 and 2VB7) reported a small decrease in hearing handicap and two participants (1VB4 and 2VB5) reported a slight increase in hearing handicap; none were significant enough to affect the hearing handicap categorization.

Table 3. *Individual and Mean Pre- and Post-Assessment Spanish HHIE-S Scores*

Item Number		Participants (*n*=7)								
		1VB1	1VB2	1VB3	1VB4	2VB5	2VB6	2VB7	Mean	SD
HHIE 1	Pre	4.0	0.0	0.0	2.0	4.0	0.0	4.0	2.0	2.0
	Post	4.0	0.0	N/A	4.0	4.0	0.0	2.0	2.3	2.0
HHIE 2	Pre	4.0	0.0	0.0	4.0	4.0	0.0	4.0	2.3	2.1
	Post	4.0	0.0	N/A	4.0	4.0	0.0	2.0	2.3	2.0

Table 3. *Individual and Mean Pre- and Post-Assessment Spanish HHIE-S Scores* (Continued)

HHIE 3	Pre	4.0	0.0	4.0	4.0	4.0	2.0	4.0	3.1	1.6
	Post	4.0	0.0	N/A	4.0	4.0	2.0	4.0	3.0	1.7
HHIE 4	Pre	4.0	0.0	0.0	4.0	0.0	0.0	0.0	1.1	2.0
	Post	4.0	0.0	N/A	4.0	2.0	0.0	0.0	1.7	2.0
HHIE 5	Pre	4.0	0.0	4.0	2.0	4.0	2.0	4.0	2.9	1.6
	Post	N/A	0.0	N/A	4.0	2.0	2.0	2.0	2.0	1.4
HHIE 6	Pre	4.0	0.0	0.0	0.0	0.0	0.0	4.0	1.1	2.0
	Post	N/A	0.0	N/A	4.0	0.0	0.0	4.0	1.6	2.2
HHIE 7	Pre	4.0	0.0	4.0	4.0	4.0	2.0	4.0	3.1	1.6
	Post	4.0	0.0	N/A	4.0	4.0	2.0	4.0	3.0	1.7
HHIE 8	Pre	2.0	0.0	0.0	4.0	0.0	2.0	0.0	1.1	1.6
	Post	N/A	0.0	N/A	4.0	0.0	0.0	0.0	0.8	1.8
HHIE 9	Pre	4.0	0.0	4.0	4.0	2.0	0.0	4.0	2.6	1.9
	Post	4.0	0.0	N/A	4.0	2.0	2.0	4.0	2.3	1.6
HHIE 10	Pre	4.0	0.0	2.0	4.0	0.0	2.0	4.0	2.3	1.8
	Post	4.0	0.0	N/A	4.0	2.0	2.0	4.0	2.7	1.6
Total Scores	Pre	38.0	0.0	18.0	32.0	22.0	10.0	32.0	21.7	12.5
	Post	28.0	0.0	N/A	40.0	24.0	10.0	26.0	21.3	14.2

SESMQ. The results of the SESMQ were descriptively analyzed based on the pre- and post-assessment findings of each subscale. Table 4 shows the results of the SESMQ-H or hearing ability subscale. Results of the SESMQ-H showed that there was a wide range of scores in reporting of hearing ability. A minimal clinically significant difference when comparing pre- and post-assessment scores on the SESMQ-H scale is 26.3 (Jennings, 2014). Four of six participants who completed the questionnaire both pre- and post-intervention showed some decrease in perception of hearing ability. A group 2 participant (2VB5) had the largest difference (25.0) in score on this scale, but none of the participants' changes in scores met the minimal clinically significant difference criteria.

Table 4. *Individual and Mean Pre- and Post-Assessment Spanish SESMQ-H Scores*

Item Number		Participants (*n*=7)								
		1VB1	1VB2	1VB3	1VB4	2VB5	2VB6	2VB7	Mean	SD
1	Pre	7.0	10.0	5.0	1.0	10.0	10.0	8.0	7.3	3.4
	Post	8.0	9.0	N/A	4.0	8.0	10.0	3.0	7	2.8
2	Pre	5.0	9.0	3.0	0.0	7.0	5.0	1.0	4.3	3.2
	Post	0.0	10.0	N/A	0.0	4.0	6.0	3.0	3.8	3.8
3	Pre	0.0	9.0	7.0	3.0	6.0	10.0	3.0	5.4	3.6
	Post	1.0	10.0	N/A	0.0	7.0	6.0	3.0	4.5	3.8
4	Pre	0.0	10.0	6.0	7.0	10.0	10.0	3.0	6.6	3.9
	Post	3.0	10.0	N/A	3.0	9.0	10.0	4.0	6.5	3.5
5	Pre	5.0	10.0	5.0	3.0	8.0	5.0	3.0	5.6	2.6
	Post	0.0	10.0	N/A	4.0	8.0	9.0	4.0	5.8	3.8
6	Pre	0.0	9.0	5.0	5.0	10.0	7.0	1.0	5.3	3.8
	Post	3.0	10.0	N/A	2.0	8.0	10.0	4.0	6.2	3.6
7	Pre	5.0	9.0	6.0	4.0	8.0	10.0	2.0	6.3	2.9
	Post	2.0	10.0	N/A	4.0	5.0	10.0	4.0	5.8	3.4
8	Pre	2.0	9.0	4.0	2.0	8.0	5.0	3.0	4.7	2.8
	Post	0.0	10.0	N/A	8.0	8.0	9.0	3.0	6.3	4.0
9	Pre	2.0	9.0	4.0	4.0	10.0	10.0	5.0	6.3	3.3
	Post	0.0	10.0	N/A	2.0	7.0	9.0	3.0	5.2	4.1
10	Pre	5.0	9.0	5.0	3.0	7.0	5.0	2.0	5.1	2.3
	Post	3.0	10.0	N/A	0.0	5.0	6.0	3.0	4.5	3.4
11	Pre	5.0	9.0	5.0	5.0	7.0	5.0	3.0	5.6	1.9
	Post	1.0	10.0	N/A	0.0	8.0	0.0	3.0	4.4	4.4
12	Pre	5.0	9.0	3.0	4.0	7.0	5.0	3.0	5.1	2.2
	Post	0.0	10.0	N/A	4.0	8.0	7.0	3.0	5.3	3.7
13	Pre	5.0	9.0	4.0	2.0	8.0	10.0	3.0	5.9	3.1
	Post	0.0	10.0	N/A	0.0	6.0	0.0	3.0	3.8	4.3
14	Pre	0.0	9.0	3.0	1.0	5.0	5.0	3.0	3.7	3.0
	Post	3.0	10.0	N/A	0.0	0.0	6.0	3.0	4.4	3.8
15	Pre	3.0	9.0	2.0	2.0	6.0	5.0	3.0	4.2	2.6
	Post	3.0	10.0	N/A	1.0	7.0	5.0	2.0	4.7	3.4
16	Pre	0.0	9.0	5.0	4.0	10.0	10.0	5.0	6.1	3.7
	Post	6.0	10.0	N/A	4.0	8.0	10.0	4.0	7.0	2.8
17	Pre	3.0	9.0	6.0	6.0	8.0	10.0	4.0	6.6	2.6
	Post	6.0	10.0	N/A	5.0	8.0	10.0	5.0	7.3	2.3
18	Pre	5.0	10.0	7.0	4.0	10.0	10.0	4.0	7.1	2.9
	Post	3.0	10.0	N/A	5.0	8.0	10.0	5.0	6.8	2.9
19	Pre	0.0	9.0	4.0	2.0	6.0	5.0	3.0	4.1	2.9
	Post	2.0	10.0	N/A	4.0	8.0	10.0	4.0	6.7	3.5
20	Pre	5.0	9.0	7.0	7.0	8.0	10.0	3.0	7	2.4
	Post	4.0	10.0	N/A	4.0	8.0	10.0	4.0	6.7	3.0

Table 4. *Individual and Mean Pre- and Post-Assessment Spanish SESMQ-H Scores* (Continued)

Total Scores	Pre	62.0	184.0	96.0	69.0	159.0	152.0	65.0	112.4	51.3
	Post	48.0	199.0	N/A	50.0	134.0	148.0	68.0	107.8	61.8

The SESMQ-C scores are displayed in Table 5 for the pre- and post-assessment administrations. For this scale scores are categorized as follows: scores ranging between 0 and 80 are equivalent to low self-efficacy, medium self-efficacy is represented by the range of scores between 81 and 140, and scores ranging from 141 to 200 are representative of high self-efficacy (Jennings, 2014). The pre-assessment scores indicate that two out of seven participants reported low self-efficacy, while only two reported medium self-efficacy, and three others reported high self-efficacy. For this scale, changes were noted in the post-assessment scores for all participants, around half of the participants had score changes that were not significant enough to affect the category level of self-efficacy perceived, nor met the minimal difference that is considered real of 26.8 points (Jennings, 2014). The remaining participants who completed both pre- and post-assessments, did report significant changes. One participant (1VB1) showed an increase in perception of self-efficacy that met the minimal clinically significant difference but both scores were within the low-efficacy category. During post-assessment, two other participants (2VB5 and 2VB7) reported self-efficacy scores that were significantly lower than the pre-assessment scores. Of the two participants who reported a reduction in perception of self-efficacy, one (2VB5) reported a change from high self-efficacy to medium, the second person (2VB7) reported a change from medium self-efficacy to low.

Table 5. *Individual and Mean Pre- and Post-Assessment Spanish SESMQ-C Scores*

Item Number		Participants (*n*=7)								
		1VB1	1VB2	1VB3	1VB4	2VB5	2VB6	2VB7	Mean	SD
1	Pre	0.0	10.0	5.0	1.0	10.0	10.0	8.0	6.3	4.3
	Post	3.0	10.0	N/A	3.0	8.0	10.0	4.0	6.3	3.4
2	Pre	0.0	9.0	3.0	0.0	10.0	2.0	3.0	3.9	4.1
	Post	5.0	10.0	N/A	0.0	4.0	9.0	2.0	5.0	3.9
3	Pre	0.0	9.0	6.0	3.0	8.0	10.0	5.0	5.9	3.5
	Post	0.0	10.0	N/A	0.0	7.0	9.0	3.0	4.8	4.4
4	Pre	0.0	10.0	6.0	7.0	10.0	10.0	5.0	6.9	3.7
	Post	5.0	10.0	N/A	3.0	9.0	10.0	4.0	6.8	3.2
5	Pre	0.0	10.0	5.0	3.0	8.0	5.0	5.0	5.1	3.2
	Post	6.0	10.0	N/A	5.0	8.0	9.0	4.0	7.0	2.4
6	Pre	0.0	9.0	5.0	5.0	10.0	7.0	6.0	6.0	3.3
	Post	2.0	10.0	N/A	2.0	8.0	9.0	4.0	5.8	3.6
7	Pre	0.0	9.0	6.0	4.0	8.0	10.0	7.0	6.3	3.4
	Post	3.0	10.0	N/A	4.0	5.0	9.0	4.0	5.8	2.9
8	Pre	0.0	9.0	4.0	2.0	8.0	5.0	2.0	4.3	3.3
	Post	0.0	10.0	N/A	7.0	8.0	9.0	4.0	6.3	3.7
9	Pre	0.0	9.0	5.0	4.0	10.0	10.0	6.0	6.3	3.7
	Post	2.0	10.0	N/A	2.0	7.0	9.0	4.0	5.7	3.5
10	Pre	0.0	9.0	5.0	3.0	7.0	5.0	7.0	5.1	3.0
	Post	0.0	10.0	N/A	0.0	5.0	6.0	4.0	4.2	3.8
11	Pre	0.0	9.0	5.0	5.0	7.0	5.0	7.0	5.4	2.8
	Post	0.0	10.0	N/A	0.0	8.0	6.0	3.0	4.5	4.2
12	Pre	0.0	9.0	3.0	4.0	7.0	5.0	7.0	5.0	3.0
	Post	0.0	10.0	N/A	4.0	8.0	7.0	3.0	5.3	3.7
13	Pre	0.0	9.0	4.0	2.0	8.0	10.0	7.0	5.7	3.8
	Post	0.0	10.0	N/A	0.0	6.0	6.0	3.0	4.1	3.9
14	Pre	0.0	9.0	2.0	1.0	5.0	5.0	7.0	4.1	3.3
	Post	8.0	10.0	N/A	0.0	N/A	6.0	3.0	5.4	4.0
15	Pre	0.0	9.0	2.0	2.0	6.0	5.0	7.0	4.4	3.2
	Post	7.0	10.0	N/A	1.0	7.0	5.0	3.0	5.5	3.2
16	Pre	0.0	9.0	5.0	4.0	10.0	10.0	7.0	6.4	3.7
	Post	9.0	10.0	N/A	4.0	8.0	10.0	4.0	7.5	2.8
17	Pre	0.0	9.0	6.0	6.0	8.0	10.0	7.0	6.6	3.3
	Post	9.0	10.0	N/A	5.0	8.0	10.0	5.0	7.8	2.3
18	Pre	0.0	10.0	7.0	4.0	10.0	10.0	8.0	7.0	3.8
	Post	7.0	10.0	N/A	5.0	8.0	10.0	5.0	7.5	2.3
19	Pre	0.0	9.0	4.0	2.0	6.0	5.0	8.0	7.0	3.8
	Post	5.0	10.0	N/A	0.0	4.0	5.0	3.0	4.5	3.3
20	Pre	0.0	9.0	6.0	7.0	8.0	10.0	7.0	6.7	3.2
	Post	7.0	10.0	N/A	4.0	8.0	10.0	5.0	7.3	2.5
Total Scores	Pre	0.0	184.0	94.0	69.0	164.0	149.0	126.0	112.3	63.5
	Post	78.0	200.0	N/A	49.0	134.0	164.0	74.0	116.5	59.0

Post-Assessment

Program Evaluation. Table 6 displays participants' rating of statements regarding the different topics presented, including: 1. hearing and hearing loss, 2. audiogram, 3. communication strategies, 4. hearing aids, and 5. assistive listening devices. Each topic was rated with regard to the clarity and usefulness of the information presented on them and respondents used a 5-points Likert scale with 1 being the worst outcome possible (*completely disagree*) and 5 being the best outcome possible (*completely* agree). The mean scores for all statements was a 5, both with regard to clarity and usefulness, which was the maximum score possible. There was only one participant who rated the usefulness of the hearing aid information a 4 out of 5 and that individual was one who attended as a communication partner and did report any hearing difficulty.

Table 6. *Individual and Mean Program Evaluation Scores for Clarity and Usefulness of Topics*

Topics		Participants (*n=4*)				
		1VB1	1VB2	1VB4	2VB6	Mean
Hearing & Hearing Loss	Clarity	5.0	5.0	5.0	5.0	5.0
	Usefulness	5.0	5.0	5.0	5.0	5.0
Audiogram	Clarity	5.0	5.0	5.0	5.0	5.0
	Usefulness	5.0	5.0	5.0	5.0	5.0
Communication Strategies	Clarity	5.0	5.0	5.0	5.0	5.0
	Usefulness	5.0	5.0	5.0	5.0	5.0
Hearing Aids	Clarity	5.0	5.0	5.0	5.0	5.0
	Usefulness	5.0	4.0	5.0	5.0	4.8
ALDs	Clarity	5.0	5.0	5.0	5.0	5.0
	Usefulness	5.0	5.0	5.0	5.0	5.0

Note. ALDs=Assistive Listening Devices.

In response to the statement about the overall rating of VBPA, all participants indicated that the program is "Excellent." Additional comments provided by the participants also reflected great satisfaction with the program, as can be seen in the following:

> *"Me encanto me gusto mucho-todo esta muy bien-me gustaria seguir viniendo no necesitaria cambiar nada."* – Participant 1VB1
>
> *"Did a very good class. Good information and easy to understand."* – Participant 1VB2
>
> *"This class is very good for me."* – Participant 1VB4
>
> *"Estoy encantada con el curso. Lo presentan muy bien con el microfono y los slides. Estoy muy agradecida. Esta excelente el curso. No, mejor no puede estar. Toda la informacion muy util. Quiero regresar al curso. Les agradezco mucho por su esfuerzo no tengo palabras como agradecerlo."*– Participant 2VB6

IOI-AI. In addition to the program evaluation, another assessment that was used to assess outcomes of participation in this specific group AR program, was the IOI-AI. Table 7 displays each participant's scores on the Spanish version of the IOI-AI for each of the items that represent different outcome domains. The mean scores and standard deviations for each of the seven domains is also displayed. Response alternatives ranged from values of 1 to 5 and although the options were different for each of the seven items, a higher score always represents a more positive outcome.

The mean scores show that across domains participants generally assigned a score of 3.0 to each outcome domain. However, for question 4, which asked: "*In general, do you think that the VBPA classes are worth the trouble?*", the mean score was higher (4.5). A higher score on

question 4 indicates that participants were satisfied with VBPA despite the fact that some difficulties were still experienced.

Table 7. *Individual and Mean Scores on Spanish version of IOI-AI*

Outcome Domain	Participants (*n=6*)						
	1VB1	1VB2	1VB4	2VB5	2VB6	2VB7	Mean (SD)
Use	4.0	1.0	4.0	4.0	2.0	3.0	3.0 (1.3)
Ben	4.0	4.0	4.0	3.0	4.0	3.0	3.7 (0.5)
RAL	3.0	5.0	3.0	4.0	4.0	4.0	3.8 (0.8)
Sat	3.0	5.0	4.0	5.0	5.0	5.0	4.5 (0.8)
RPR	3.0	5.0	1.0	4.0	4.0	3.0	3.3 (1.4)
Ioth	5.0	3.0	3.0	4.0	5.0	3.0	3.8 (1.0)
QoL	3.0	2.0	4.0	4.0	4.0	3.0	3.3 (0.8)

Note. Ben=Benefit; RAL=Residual Activity Limitations; Sat=Satisfaction; RPR=Residual Participation Restrictions; Ioth=Impact on Others; QoL=Quality of Life.

In addition to the IOI-AI scores being compared across participants, as displayed in Table 8, scores were also compared with the two previous Spanish-language adaptations of LWHL. The mean scores and standard deviations across cohorts for each of the seven domains assessed by the instrument are listed in the table below. Although statistical analysis to compare scores across AR group cohorts was not completed, as is evident, all mean scores are comparable. Differences across mean scores for all domains are within half a point, with the exception of the items concerning impact on others (question 6) and quality of life (question 7). For question 7, both VBPA and USF participants had an average score of 3.3, whereas *El Pueblo* participants had an average score of 3.9. It is important to note that all VBPA participants completed the same version of the IOI-AI regardless of whether they identified as a PHL or a FCP because hearing status was not audiometrically measured.

Table 8. *Comparison of Mean IOI-AI Scores of El Pueblo, USF, and VBPA group AR programs*

Outcome Domain	*El Pueblo* (*n=10-12*) M (SD)	USF (*n=4*) M (SD)	VBPA (*n=6*) M (SD)
Use	3.1 (0.7)	3.3 (0.6)	3.0 (1.3)
Ben	3.4 (1.0)	3.3 (1.0)	3.7 (0.5)
RAL	3.6 (0.7)	3.3 (1.0)	3.8 (0.8)
Sat	4.5 (0.8)	4.0 (0.8)	4.5 (0.8)
RPR	3.1 (1.0)	3.5 (0.5)	3.3 (1.4)
Ioth	4.1 (1.0)	3.3 (1.0)	3.8 (1.0)
QoL	3.9 (0.9)	3.3 (1.0)	3.3 (0.8)

Note. IOI-AI=International Outcome Inventory-Alternative Interventions; Ben=Benefit; RAL=Residual Activity Limitations; Sat=Satisfaction; RPR=Residual Participation Restrictions; Ioth=Impact on Others; QoL=Quality of Life; M=Mean; SD=Standard Deviation.

Discussion

The present investigation aimed to develop Spanish-language AR materials and pilot the implementation of an on-campus Spanish-language AR group at the University of Arizona. A secondary purpose of this investigation was to observe the clinical program and assess it through self-report outcome measures completed by participants.

The creation of linguistically and culturally appropriate materials and program implementation aspects of this project provided the investigators with a new understanding of the challenges that can be encountered when adapting available interventions for underserved minorities. The adaptation of materials was facilitated by the fact that two of the investigators spoke the dialect of Spanish primarily spoken in Tucson. Nevertheless, choosing the most appropriate terms for the target audience while maintaining an adequate balance with technical jargon was challenging. Although there were a few attendees who were English-dominant bilinguals who were literate only in English, the facilitators' bilingual skills allowed them to easily adapt and facilitate communication for all. Overall, the development and implementation phases of this study appear to have been completed successfully based on the positive participant

feedback and high satisfaction with VBPA. Comparisons with regard to material adaptation across Spanish-language adaptations of LWHL could not be done, as researchers referenced did not report their experiences with that phase of their investigations.

An aspect of implementation that the LWHL at USF investigation did report on was difficulty with recruitment, which was also experienced in this study. While over half of those who expressed interest in VBPA completed at least one session, there were at least four others who were not able to attend any of the sessions due to health concerns and class times conflicting with work schedules. Most commonly, class times conflicted with the work schedule of the FCP, who was also the means of transportation. Lack of transportation was also a factor that reportedly limited participation in the USF implantation of LWHL. Since the sessions were offered in the morning and some interested individuals stated that time of day did not work for them, offering afternoon sessions or more than one class per semester may result in higher numbers of participants. In fact, one previous investigation in which 38 participants were included, reported that two groups were offered simultaneously, and accommodations were made based on preference and convenience (Preminger, 2003). Holmes (2016) proposed that one option for increasing cohort sizes is to approach potential program candidates that are members of established facilities. Perhaps one option would be to make greater efforts to recruit from senior centers, as people who are familiar with each other could attend together and the center leaders may serve as a means of transportation as was the case for some of the VBPA participants.

For the assessment aspect of this study, in addition to a program evaluation and a case history, four Spanish-language adaptations of previously published self-report measures were included. The inclusion of both commonly used and not as commonly used questionnaires was in an effort to utilize well-recognized measures, recently created adaptations such as the Spanish

SESMQ, and to explore other instruments that may be useful in the assessment of group AR like the S-AIADH. The exploration of new instruments was an important aspect of the study because previous research has concluded that the benefits of group AR are not astounding possibly because the instruments used are not sensitive to the benefits of that type of intervention (Hawkins, 2005).

An instrument that has not been as commonly reported in the assessment of group AR is the S-AIADH. For this study the interpretation of the S-AIADH results is limited because it is a pre-/post-assessment questionnaire that was only used pre-intervention. However, based on observations from administering the assessment, participants found the language easy to comprehend and the pictures helped them understand the situations represented. Similarly, the Spanish SESMQ was well understood by participants. The results of that questionnaire revealed that a majority of participants showed an increase in self-perceived hearing handicap; however, none had minimal clinically significant differences. Although the score changes were not significant, the fact that a majority of participants had an increase in their perception of hearing handicap could be suggestive of increased awareness resulting from participating in VBPA. Additionally, according to Weinstein (1986), the questions asked in self-assessment tools can make individuals more aware of their hearing difficulties, thus having completed the assessment a second time, participants may have become more aware of their communicative challenges. On the confidence scale of the SESMQ, half of the participants had a score increase, with only meeting the minimal clinically significant difference. In contrast, two of three participants who demonstrated a decrease in perceived self-efficacy, had significant score changes. Given that one half of participants showed increased self-efficacy and the other showed a decrease, the findings of the SESMQ-C are inconclusive, as there was also no trend noted with regard to either type of participant (PHL or FCP) experiencing change in one given direction.

Similarly, to the SESMQ, the HHIE-S found that reports of hearing handicap varied. The post-intervention HHIE-S scores showed that about half of the participants had a decrease in perceived hearing handicap and approximately half had an increase, not allowing for an overall interpretation of results. However, one conclusion that can be made is that AR group programs are something that people who are having hearing difficulties are seeking, as all participants except one reported a hearing handicap prior to the intervention and more than half completed the intervention. That conclusion is also supported by the program evaluations outcomes that indicate all participants were satisfied with the intervention and found the information useful. IOI-AI results also support that conclusion, as the domain scored highest across all three AR programs was satisfaction with the intervention.

One last finding of this investigation was that the Spanish version of the IOI-AI yielded similar scores across three Spanish-language adaptations of LWHL. Although not statistically analyzed, the similarities that this investigation observed across the three AR programs are evident. Those findings indicate that this type of intervention has consistent results not only across different Hispanic populations, but also in different settings (on-campus versus off-campus).

The finding that group AR programs yield similar results across populations and settings, at least on one measure, is important because it shows that people are receptive to this type of intervention. Further, the consistent satisfaction results suggest that it could potentially be applied in other regions of the country with similar populations that would be receptive to the intervention as well. Given that this investigation has contributed to setting the foundation for on-campus Spanish-language group AR, it could potentially be an example for other programs to be modeled after it. Holmes (2005) suggests that spreading knowledge of the availability of

"pre-packaged" group AR programs could motivate more audiologists to implement such programs and that could help increase the provision of routine AR services.

Limitations and Future Research Needs

Although this study provides a starting point for future AR interventions geared toward Spanish-speaking minorities, limitations are recognized. The sample size of this study was similar to other group AR programs targeted toward a similar population, but small in comparison to English-language group AR programs, which are more well-established and studied. The small sample size along with inconsistency in findings in some of the measures, limits the interpretation of findings. Another limitation of this study is that hearing was not assessed audiometrically and therefore the actual number of people with confirmed hearing loss is unknown.

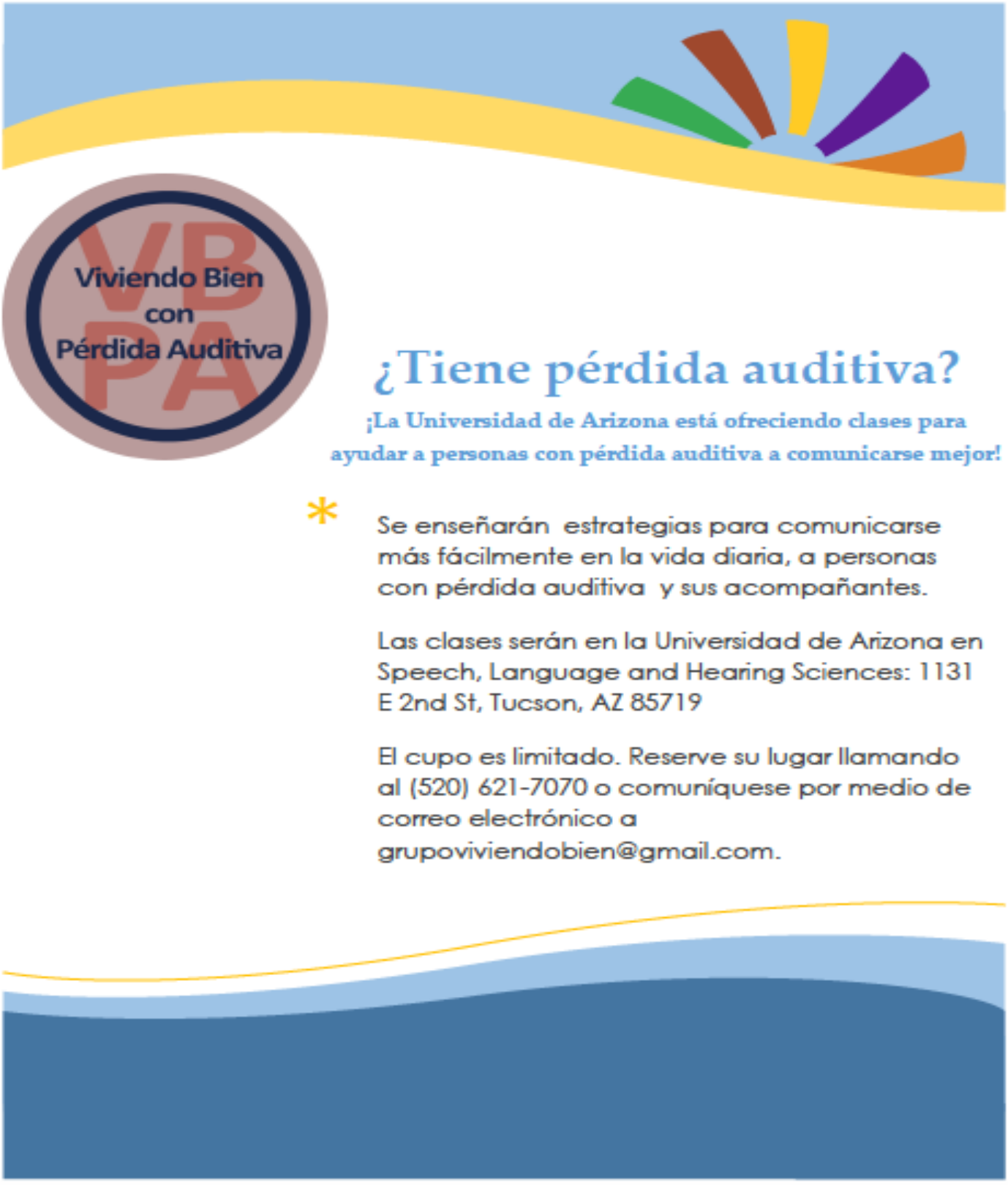
The results of this study support that there is a need for group AR services and that people are receptive to this type of intervention; however, there is a need for further development and evaluation of the program. Future investigations should include an audiometric assessment of hearing and evaluation of the program's effectiveness through assessment of long-term outcomes and measures specific to significant others. Once well-established, a comparison of LWHL and VBPA outcomes should be conducted.

Clinical Implications

Epidemiologic data indicates that hearing loss is a highly prevalent condition and older individuals are more likely to experience it. Therefore, it is important for audiologists, to ensure that a variety of interventions are available to patients, including group AR. Given the large Hispanic populations living in the United States, the need to increase intervention options also concerns Spanish-language services and group AR appears to be an intervention that Spanish-speaking patients are receptive to. In order to meet the unique needs of all patients, audiologists

should then take an active role in seeking or developing group AR services to further educate and support those patients. The provision of appropriate group AR services has implications not only for the quality of care that Spanish-speaking patients with hearing loss receive, it also has implications in terms of the number of individuals that audiologic services are able to reach.

APPENDIX A –FLYER



APPENDIX B – CASE HISTORY AND HHIE-S

¡Viviendo Bien con pérdida auditiva!

Office Use Only	ID Number

Información general

1. Género: ☐ M ☐ F
2. Origen étnico: ☐ Hispano ☐ Blanco ☐ Otro
3. Edad: _____
4. Estado civil: ☐ Casado ☐ Soltero ☐ Viudo ☐ Divorciado
5. ¿Tiene seguro médico? Sí ☐ ☐ No ☐ Medicare ☐ Medicaid ☐ Otro _____
6. Nivel de educación completado:
   ☐ Menos de la preparatoria ☐ La preparatoria / GED ☐ Más de la preparatoria
7. ¿Donde vive ud.? _____
8. ¿Cómo están relacionados usted y su acompañante ? Somos… _____

Información sobre su salud

9. ¿Cree usted que tiene pérdida de audición? ☐ Sí ☐ No ☐ No sé
10. ¿Le han hecho un examen de audición? ☐ Sí ☐ No ☐ No sé
11. ¿Ha usado un aparato para oír (aparato auditivo, audífono) ☐ Sí ☐ No
    - Si respondió que sí, ¿usa su aparato hoy en día? _____
12. ¿Creen sus familiares o amigos que usted tiene pérdida de audición? ☐ Sí ☐ No ☐ No sé
13. ¿Escucha zumbidos (tinnitus) u otros ruidos en sus oídos? ☐ Casi siempre ☐ De vez en cuando ☐ No
14. ¿Ha trabajado en lugares ruidosos? (la construcción, la minería, la agricultura, las fuerzas armadas etc)
    ☐ Sí ☐ No Si respondió que sí, ¿en cuáles lugares? _____
15. ¿Tiene algún pasatiempo ruidoso? (conciertos, montar motocicletas etc)
    ☐ Sí ☐ No Si respondió que sí, ¿cuáles son sus pasatiempos ruidosos?
    _____
16. ¿Ha protegido sus oídos de ruidos excesivos?
    ☐ Sí ☐ No
    Si respondió que sí, ¿qué usó? _____
17. ¿Tiene problemas para oír por teléfono? ☐ Siempre ☐ Algunas veces ☐ Nunca
18. En general, ¿cómo clasificaría su estado de salud?"
    Excelente ☐ Muy Bueno ☐ Bueno ☐ Regular ☐ Malo ☐

Hearing Handicap Inventory for the Elderly-Screening Version: Spanish Le voy a hacer unas preguntas sobre su audición.	Sí	No	A veces
HHI 1. ¿Le da pena cuando conoce a personas por primera vez porque no oye bien?			
HHI 2. ¿Se siente frustrado o confundido cuando habla con miembros de su familia porque no oye bien?			
HHI 3. ¿Tiene dificultad para oír cuando alguien habla en voz baja?			
HHI 4. ¿Usted no participa en algunas actividades porque no oye bien?			
HHI 5. ¿Tiene dificultad cuando visita o platica con sus amigos, parientes o vecinos porque no oye bien?			
HHI 6. ¿Discute con miembros de su familia porque no oye bien?			
HHI 7. ¿Tiene que subir el volumen para escuchar la televisión o radio porque no oye bien?			
HHI 8. ¿El no oír bien lo limita o le causa dificultades en su vida personal o social?			
HHI 9. ¿Le resulta difícil oír bien cuando se encuentra en un restaurante con parientes o amigos?			
HHI 10. ¿Le resulta difícil oír en una conversación con un grupo de personas?			

APPENDIX C – PROGRAM EVALUATION

VIVIENDO BIEN CON PÉRDIDA AUDITIVA–
Evaluación del programa

Fechas:_____

Yo asistí como:

☐ la persona con pérdida auditiva

☐ la persona que se comunica frecuentemente o vive con alguien con pérdida auditiva

Por favor evalúe las siguientes afirmaciones. Seleccione un número usando lo siguiente como guía:

1 Totalmente en desacuerdo	2 No estoy de acuerdo	3 Indiferente	4 De acuerdo	5 Totalmente de acuerdo

La información sobre la audición y la pérdida auditiva					
me ha ayudado a entender mejor mi pérdida auditiva (o la de mi pareja)	1	2	3	4	5
fue presentada de una manera que fue fácil de entender	1	2	3	4	5
La información sobre el audiograma					
me ha ayudado a entender mejor mi pérdida auditiva (o la de mi pareja)	1	2	3	4	5
fue presentada de una manera que fue fácil de entender	1	2	3	4	5
La información sobre cómo mejorar la comunicación					
es algo que puedo aplicar en mi vida diaria	1	2	3	4	5
fue presentada de una manera que fue fácil de entender	1	2	3	4	5
La información sobre audífonos					
es algo que puedo aplicar en mi vida diaria	1	2	3	4	5
fue presentada de una manera que fue fácil de entender	1	2	3	4	5
La información sobre otros dispositivos auxiliares (ej. teléfono)					
es algo que puedo aplicar en mi vida diaria	1	2	3	4	5
fue presentada de una manera que fue fácil de entender	1	2	3	4	5

En general, creo que este curso:
☐Es excelente ☐Es bueno, pero puede mejorar ☐ Es aceptable ☐No vale la pena ☐Sin opinión

Comentarios y sugerencias

_____
_____
_____
_____
_____

_____Sí, doy permiso de que incluyan mis comentarios en sus publicaciones/presentaciones de manera anónima
_____No, prefiero que no incluyan mis comentarios

APPENDIX D – IOI-AI

CUESTIONARIO INTERNACIONAL DEL RESULTADO DE USO DE ESTRATEGIAS (IOI-AI)

1. Pensando en las últimas dos semanas, ¿cuánto ha usado las estrategias de comunicación que aprendió en la clase *Viviendo Bien con Pérdida Auditiva* (**VBPA**)?

Nunca	**Menos de 1 hora/día**	**De 1-4 horas/día**	**De 4-8 horas/día**	**Más de 8 horas/día**

2. Piense en una situación en la cual le hubiese gustado poder oír mejor antes de asistir a la clase VBPA. En las últimas dos semanas, ¿cuánto le han ayudado la clase en esa misma situación?

No me ayudaron	**Me ayudaron poco**	**Me ayudaron algo**	**Me ayudaron bastante**	**Me ayudaron mucho**

3. Piense otra vez en la situación anterior en la cual a usted le hubiese gustado poder oír mejor. Cuando utiliza ahora las estrategias de comunicación que aprendió en la clase VBPA, ¿cuánta dificultad tiene todavía en esa situación?

Mucha dificultad	**Bastante dificultad**	**Algo de dificultad**	**Poca dificultad**	**Ninguna dificultad**

4. En general, ¿piensa usted que vale la pena la clase VBPA?

No	**Un poco**	**Bastante**	**Mucho**	**Definitivamente sí**

5. En las últimas dos semanas, con las estrategias de comunicación que aprendió en la clase VBPA, ¿cuánto ha afectado su dificultad auditiva en sus actividades normales?

Mucho	**Bastante**	**Un poco**	**Muy poco**	**Nada**

6. En las últimas dos semanas, con las estrategias de comunicación que aprendió en la clase VBPA, ¿cuánto piensa que su dificultad auditiva ha molestado a otras personas?

Mucho	**Bastante**	**Un poco**	**Muy poco**	**Nada**

7. En general, ¿de qué manera ha afectado el uso de las estrategias de comunicación de VBPA su manera de disfrutar la vida?

Empeoró	**Sigue igual**	**Mejoró un poco**	**Mejoró bastante**	**Mejoró mucho**

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